

42

**PATENT**  
Attorney Docket No. 28845

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:  
WARKHEDE ET AL.

Group Art Unit: 2122

Application No. 10/042,847

Examiner: TBD

Filed: January 8, 2002

For: Method And Apparatus For Mapping  
Prefixes and Values of a Hierarchical  
Space to Other Representations

**Received**

**MAR 01 2002**

**Technology Center 2100**

Assistant Commissioner for Patents  
Washington, D.C. 20231

**INFORMATION DISCLOSURE STATEMENT**

Pursuant to 37 C.F.R. §§ 1.97 and 1.98, the references listed on the enclosed Form PTO-1449 are submitted for consideration by the Examiner in the examination of the above-identified patent application. The full consideration of the references in their entirety by the Examiner is respectfully requested and encouraged. Also, it is respectfully requested that the references be entered into the record of the present application and that the Examiner place his or her initials in the appropriate area on the enclosed Form PTO-1449, thereby indicating the Examiner's consideration of each of the references.

A bona fide attempt is made to comply with §§ 1.97-98. The filing of this information disclosure statement should not be construed as a representation that a search has been made, nor is it to be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b). Additionally, the submission of this IDS is for the purpose of providing a complete record and is not a concession that the references are prior art to the invention claimed in the patent application. The right is expressly reserved to establish an invention date earlier than the above-identified filing date in order to remove any reference submitted herewith as prior art should it be deemed appropriate to do so. Furthermore, the submission of the references is not to be taken as a concession that any reference represents art that is relevant or analogous to the claimed invention. Accordingly, the right to argue that any reference is not properly within the scope of prior art relevant to an examination of the claims in the above-identified application is also expressly reserved.

**The Information Disclosure Statement is being filed:**

- ☒ Under § 1.97(b): (1) within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d); (2) within three months of the date of entry of the national stage as set forth in § 1.491 in an international application; (3) before the mailing of a first Office action on the merits; or (4) before the mailing of a first Office action after the filing of a request for continued examination under § 1.114.
- ☐ Under § 1.97(c): after (1), (2), or (3) above (i.e., after paragraph (b)) and before the mailing date of any of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application, and is accompanied by:
- ☐ the statement specified in 37 C.F.R. § 1.97(e):
- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
- ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.
- ☐ the fee set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).
- ☐ Under § 1.97(d): after the period specified in § 1.97(c) and before payment of the issue fee, and is accompanied by:
- ☐ the statement specified in 37 C.F.R. § 1.97(e):
- ☐ Each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
- ☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.
- ☐ the fee set forth in 37 C.F.R. § 1.17(p) (see "Fees" below).

In re WARKHEDE ET AL.  
Serial No. 10/042,847

### Copies Of The References

- ☒ Enclosed herewith are copies of the references listed on the enclosed Form PTO-1449. A concise explanation of the relevance, as it is presently understood by the individual designated in § 1.56(c) most knowledgeable about the content of the information, of each patent, publication, or other information listed that is not in the English language is included either separate from applicant's specification or incorporated therein. Furthermore, a copy of the translation of a non-English language reference is included herewith if a written English-language translation of a non-English-language document, or portion thereof, is within the possession, custody, or control of, or is readily available to any individual designated in § 1.56(c).
- ☐ A copy of a foreign search report is enclosed herewith.
- ☐ Per 37 C.F.R. § 1.98(d), copies of the references listed on the enclosed Form PTO-1449 are not provided as they were previously submitted to, or cited by, the Office in an earlier application, and (1) the earlier application is properly identified in the information disclosure statement and is relied on for an earlier effective filing date under 35 U.S.C. 120; and (2) the information disclosure statement submitted in the earlier application complies with paragraphs (a) through (c) of this 37 C.F.R. § 198. The details of the parent application(s) relied upon for an earlier filing date under 35 U.S.C. § 120 in which copies of the references were previously furnished are set out below:

U.S. APPLICATIONS		Status ( <i>check one</i> )		
U.S. APPLICATIONS	U.S. FILING DATE	PATENTED	PENDING	ABANDONED
1.				
2.				
3.				

In re WARKHEDE ET AL.  
Serial No. 10/042,847

**Fees**

☒  
☐

No fee is owed by the applicant(s).

The IDS Fee of \$180.00 is due.

☐  
☐

Attached is check No. in the amount of \$180.

Charge Deposit Account No. 501430 in the amount of \$180.

**Authorization To Charge Additional Fees and Credit any Overpayment**

☒  
☐


If any additional fees are owed in connection with this communication, please charge  
Deposit Account No. 501430.

Credit Account No. 501430 for any overpayment in connection with this communication.

Date: February 19, 2002

Respectfully submitted,

The Law Office of Kirk D. Williams

By 

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FORM PTO-1449 MODIFIED		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		Application Number	10/042,847
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b>				Filing Date	January 8, 2002
				First Named Inventor	Priyank Warkhede
				Group Art Unit	2122
				Examiner Name	TBD
Sheet	1	of	4	Attorney Docket No.	28845

U.S. PATENT DOCUMENTS				
EXAMINER'S INITIALS	Cite No.	Document Number	ISSUE or PUBL. DATE (MM-DD-YYYY)	Name of Patentee or Applicant of Cited Document
	AA	US - 5528701	06-18-1996	Aref
	AB	US - 5651099	07-22-1997	Konsella
	AC	US - 5721889	02-24-1998	Namba
	AD	US - 5781772	07-14-1998	Wilkinson, III et al.
	AE	US - 5809501	09-15-1998	Noven
	AF	US - 5829004	10-27-1998	Au
	AG	US - 5848416	12-08-1998	Tikkanen
	AH	US - 5884297	03-16-1999	Noven
	AI	US - 6018524	01-25-2000	Turner et al.
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	AN	US - 6298339	10-02-2001	Bjornson

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				Group Art Unit	2122
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EXAMINER'S INITIALS	Cite No.	OTHER DOCUMENTS
	BA	DONALD R. MORRISON, "PATRICIA - Practical Algorithm to Retrieve Information Coded in Alphanumeric," Journal of the ACM, Vol. 15, No. 4, October 1968, pp. 514-534.
	BB	WALDVOGEL ET AL., "Scalable High Speed IP Routing Lookups," Proc. SIGCOMM '97, ACM, 1997, pp. 25-36.
	BC	LAMPSON ET AL., "IP Lookups Using Multiway and Multicolumn Search," Proc. Infocom 98, March 1998, 24 pages.
	BD	V. SRINIVASAN and GEORGE VARGHESE, "Faster IP Lookups using Controlled Prefix Expansion," ACM SIGMETRICS Performance Evaluation Review, Vol. 26 No.1, June 1998, p.1-10.
	BE	STEFAN NILSSON and GUNNAR KARLSSON, "Fast Address Look-up for Internet Routers," Proceedings of IEEE Broadband Communications, April 1998, 12 pages.
	BF	WILLIAM N. EATHERTON, HARDWARE-BASED INTERNET PROTOCOL PREFIX LOOKUPS, Master's thesis, Sever Institute, Washington University, St. Louis, MO, May 1999, 109 pages.
	BG	LAMPSON ET AL., "IP Lookups Using Multiway and Multicolumn Search," IEEE Transactions on Networking, Vol. 7, No. 3, June 1999, pp. 324-334.
	BH	LOCKWOOD ET AL., "Field Programmable Port Extender (FPX) for Distributed Routing and Queuing," Proceedings of the ACM/SIGDA international symposium on Field programmable gate arrays, February 2000, pp. 137-144.
	BI	RUIZ-SANCHEZ ET AL., "Survey and Taxonomy of IP Address Lookup Algorithms," IEEE Network Magazine, Vol. 15, No. 2, March/April 2001, pp. 8-23.
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	CB	US - 5319763	06-07-1994	Ho et al.
	CC	US - 5481540	01-02-1996	Huang
	CD	US - 5515370	05-07-1996	Rau
	CE	US - 5740171	04-14-1998	Mazzola et al.
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Sheet	4	of	4	Attorney Docket No.	28845

EXAMINER'S INITIALS	Cite No.	OTHER DOCUMENTS
	DA	JON P. WADE and CHARLES G. SODINI, "A Ternary Content Addressable Search Engine," IEEE Journal of Solid-State Circuits, Vol. 24, No. 4, August 1989, pp. 1003-1013.
	DB	TEUVO KOHONEN, CONTENT-ADDRESSABLE MEMORIES, 1987, pp. 128-129 and 142-144, Springer-Verlag, New York.
	DC	BRIAN DIPERT, ed., "Special-purpose SRAMs Smooth the Ride," EDN, June 24, 1999, pp. 93-104.
	DD	"Extending the LANCAM Comparand," Application Brief AB-N3, Rev. 1.0a Draft, Music Semiconductors, Milpitas, CA, September 30, 1998, 4 pages.
	DE	"Advantages of CAM in ASIC-Based Network Address Processing," Application Brief AB-N11, Rev. 1.2a Draft, Music Semiconductors, Milpitas, CA, September 30, 1998, 4 pages.
	DF	"Virtual Memory Applications of the MU9C1480A LANCAM," Application Note AN-N3, Rev. 1a, Music Semiconductors, Milpitas, CA, September 30, 1998, 12 pages.
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	DH	"Fast IPv4 and IPv4 CIDR Address Translation and Filtering Using the MUAC Routing CoProcessor (RCP)," Application Note AN-N25, Rev. 0a, Music Semiconductors, Milpitas, CA, October 1, 1998, 16 pages.
	DI	"Using MUSIC Devices and RCPs for IP Flow Recognition," Application Note AN-N27, Rev. 0, Music Semiconductors, Milpitas, CA, October 21, 1998, 20 pages.
	DJ	"Wide Ternary Searches Using Music CAMs and RCPs," Application Note AN-N31, Rev. 0, Music Semiconductors, Milpitas, CA, April 13, 1999, 8 pages.